Uploading GIS Spatial Data into a Garmin GPS Unit

Session Objectives - At the conclusion of this session you will be able to:

- ❑ Use DNR Garmin to upload GIS point, line, polygon and tabular XY data into a Garmin GPS unit.
- ❑ Modify waypoint symbology in DNR Garmin
- ❑ Delete all data using the reset option on the Altimeter page

Materials created by: Eric Kelchlin, March 2007

Revision: June 2010

Software: DNR Garmin version 5.3.2, ArcGIS 9.3.1

GPS unit: Garmin Map76CSx (but method applies to all Garmin units)

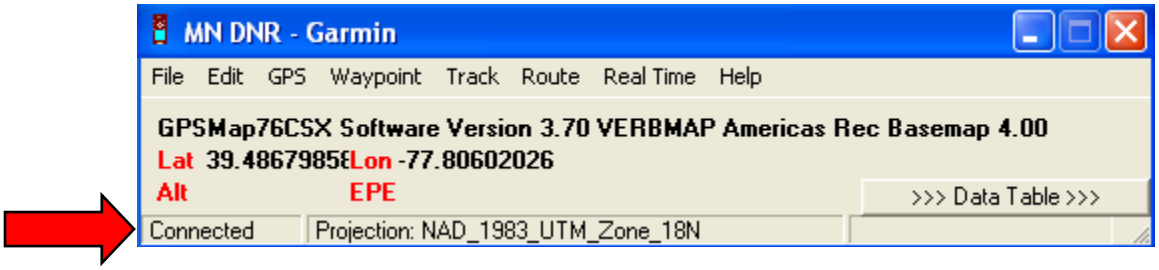
This exercise walks you through the process of uploading your GIS point, line and polygon data into your Garmin unit.

SECTION 1 – Uploading GIS Point Data into the Garmin Map76SCx

1. Delete all your data on your Garmin (if saved in the GIS already).
   - Turn on your Garmin unit.
   - Press the **MENU** button twice and select **Altimeter**.
   - Press the **MENU** button once and select **Reset**.
   - Scroll up and select **Select All** to check the remaining boxes.
   - Scroll down and select **Apply**. Select **OK**.

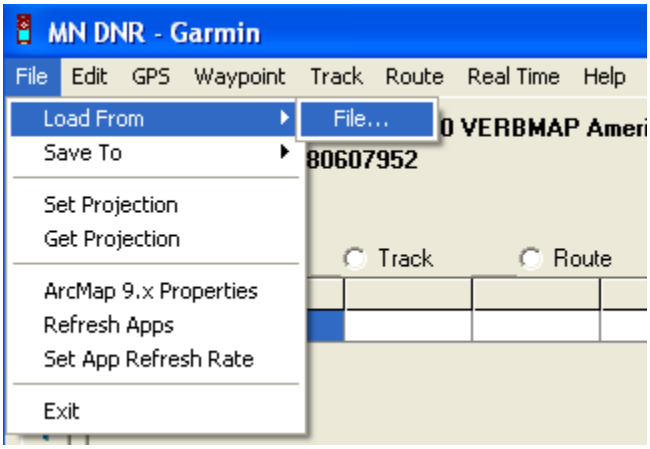
2. Attach the USB cable to your computer and Garmin unit. Be careful with the rubber flap covering the USB port, it will pull-off!

3. Double click on the DNR Garmin icon on your desktop to launch the program. Ensure that you have established a connection with your device. Note: you can also run DNR Garmin directly in ArcGIS.



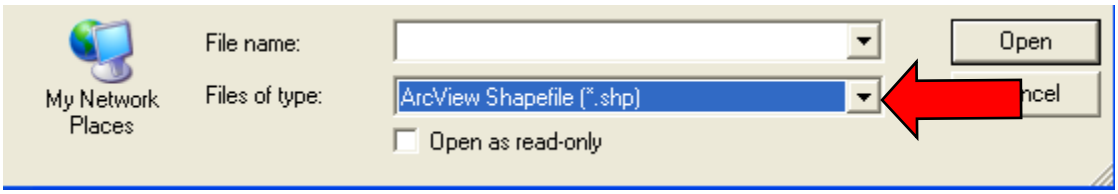
4. Check to make sure your datum and projection matches your GIS data and is appropriately set for your area. Refer to the FWS_Map76CSx_Setup document on this SharePoint site for detailed instruction on how to set your datum projection.

5. Click on **File** tab on the main menu. Select **Load From**, then **File**.



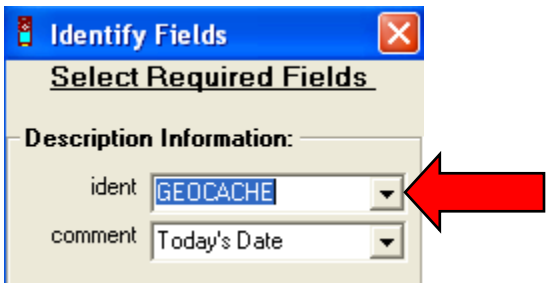
6. Browse to the location of your point data. The GIS data can be in a shapefile (.shp), geodatabase feature class or a Google Earth (.kml) format.

7. When browsing for your GIS point data change the file type in the **Files of type** field to view the data. A shapefile is shown below as an example.

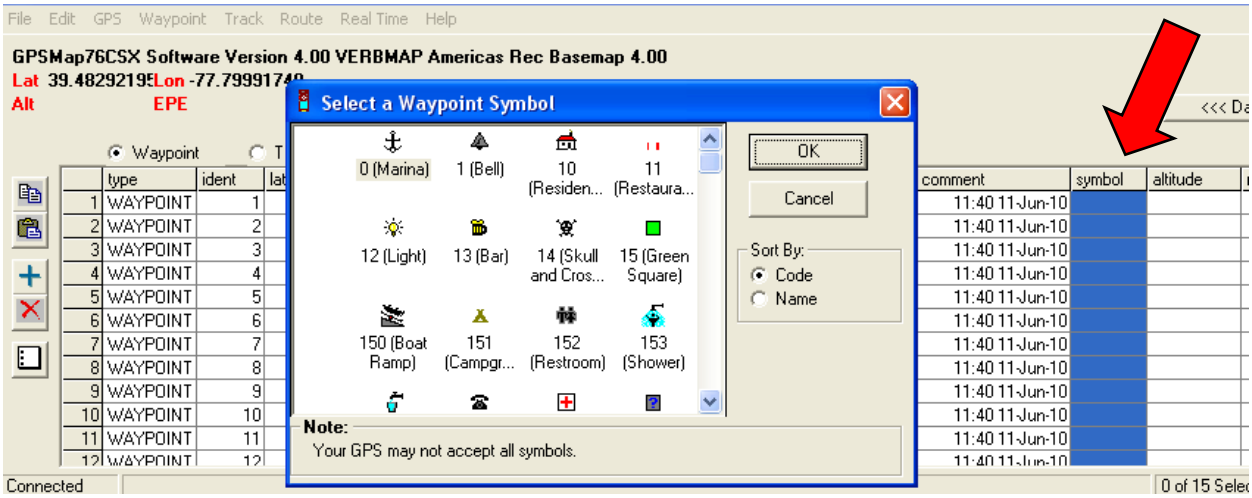


8. Select the file and click **Open**.

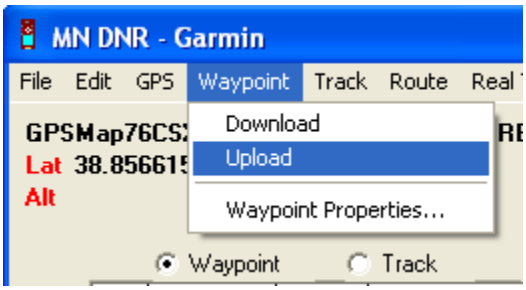
9. Change the **Ident:** field value to a field\column in the attribute table that can be used as a unique identifier or feature label. Click OK twice.



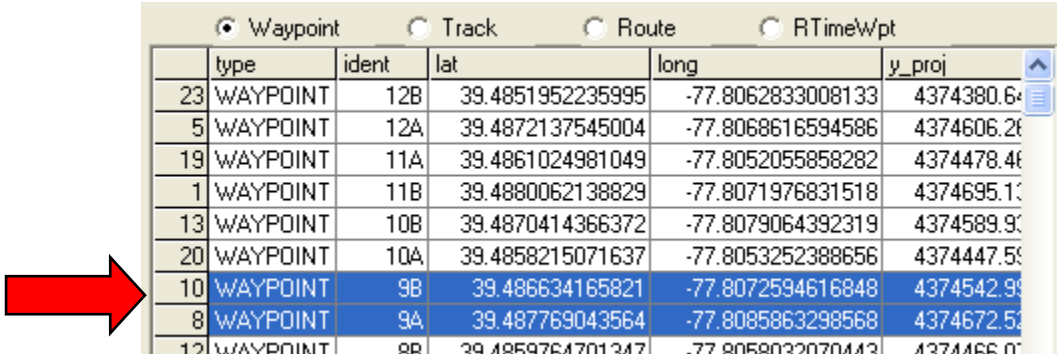
10. Scroll over to the right and double left mouse click on the **Symbol** field header. Click **OK**. This step is optional, but if you chose not to assign a symbol, then the default blue flag will identify your waypoints. Note: the Garmin unit does not accept all symbols from DNR Garmin.



11. To upload the data to your Garmin unit, simply click the **Waypoint** tab on the main menu and select **Upload**. A pop-up screen will appear when the transfer is complete.



12. <u>If you only need to upload a few points</u> click on the row id, number 10 in this example, then hold down the Shift key and click on the next row id to highlight the waypoints. Next, upload the data as shown above.



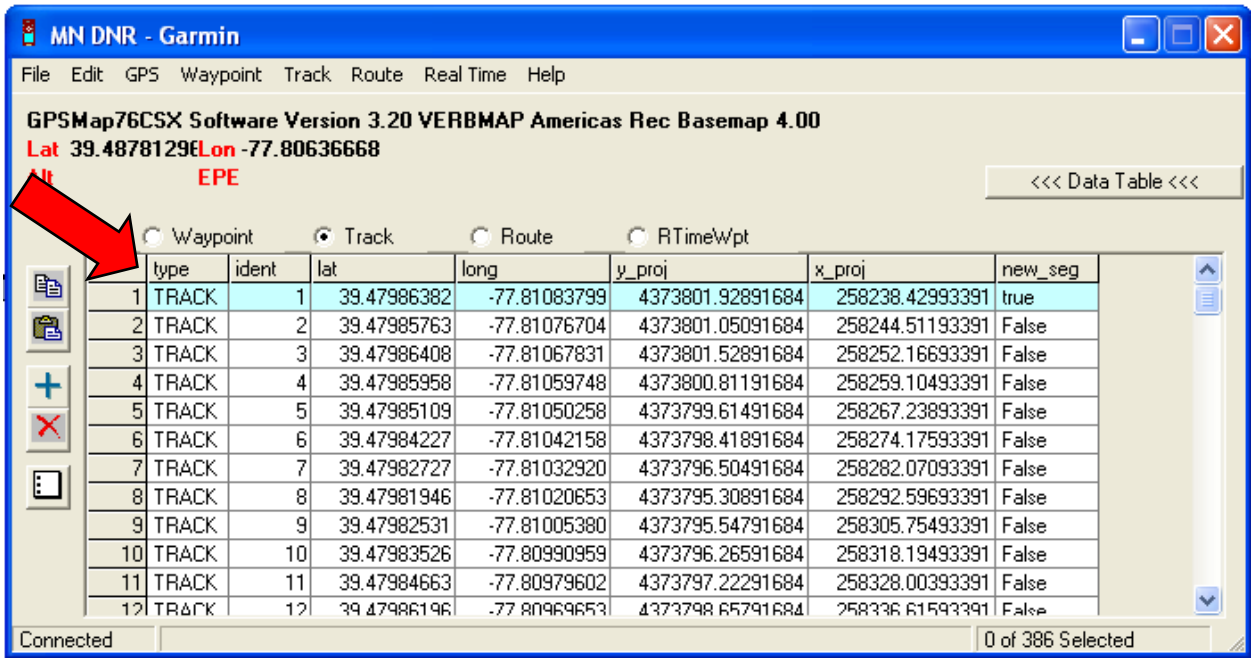
13. Check to see if your waypoints are on the Garmin unit. Press the **PAGE** button to scroll to the **Map Page**. Press the **ZOOM IN** or **ZOOM OUT** buttons to adjust the scale if necessary.

14. Has the waypoint symbol changed? _____. Why or why not?

SECTION 2 – Uploading Line or Polygon Data into the Garmin Map76SCX

Line or polygon shapefiles (Tracks in Garmin speak) are uploaded into your Garmin GPS unit just as easy as point data. Uploading layers, such as dirt roads and boundary layers, can really help you navigate to your project site by providing a known reference.

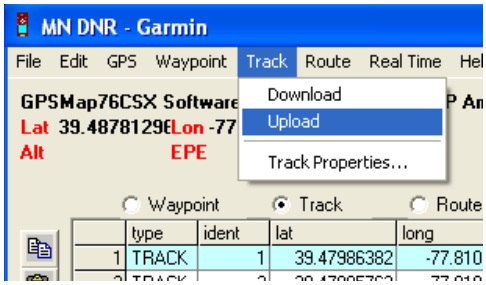
1. Browse to the location of your line or polygon GIS data.

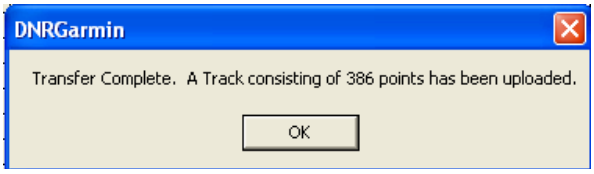


	type	ident	lat	long	y_proj	x_proj	new_seg
1	TRACK	1	39.47986382	-77.81083799	4373801.92891684	258238.42993391	true
2	TRACK	2	39.47985763	-77.81076704	4373801.05091684	258244.51193391	False
3	TRACK	3	39.47986408	-77.81067831	4373801.52891684	258252.16693391	False
4	TRACK	4	39.47985958	-77.81059748	4373800.81191684	258259.10493391	False
5	TRACK	5	39.47985109	-77.81050258	4373799.61491684	258267.23893391	False
6	TRACK	6	39.47984227	-77.81042158	4373798.41891684	258274.17593391	False
7	TRACK	7	39.47982727	-77.81032920	4373796.50491684	258282.07093391	False
8	TRACK	8	39.47981946	-77.81020653	4373795.30891684	258292.59693391	False
9	TRACK	9	39.47982531	-77.81005380	4373795.54791684	258305.75493391	False
10	TRACK	10	39.47983526	-77.80990959	4373796.26591684	258318.19493391	False
11	TRACK	11	39.47984663	-77.80979602	4373797.22291684	258328.00393391	False
12	TRACK	12	39.47986196	-77.80969653	4373798.65791684	258336.61593391	False

2. Notice that **Track**, rather than **Waypoint** was automatically filled-in as the data type. The blue record delineates the beginning of each track segment. How many segments are in your track_____?

3. Click on the **Track** tab on the main menu and select **Upload**. You'll be notified when the transfer is complete.





4. Close DNR Garmin when finished.

5. View your new layers on your Garmin **MAP Page** to make sure the data were uploaded correctly. Press the **ZOOM IN** or **ZOOM OUT** buttons to adjust the scale if necessary.

Limitations: Now that you know how to upload GIS data into your Garmin GPS unit just like a mapping grade Trimble unit, try to avoid the temptation of uploading lots of lines and polygons. You'll find that the Garmin unit software tends to connect all the lines and polygons together depending on how "clean" your data are. I call this the spider web effect. Even though you can use a Garmin to map data in the field, it has limitations when it comes to mapping lines and polygons.

SECTION 3 – Uploading Tabular XY Data

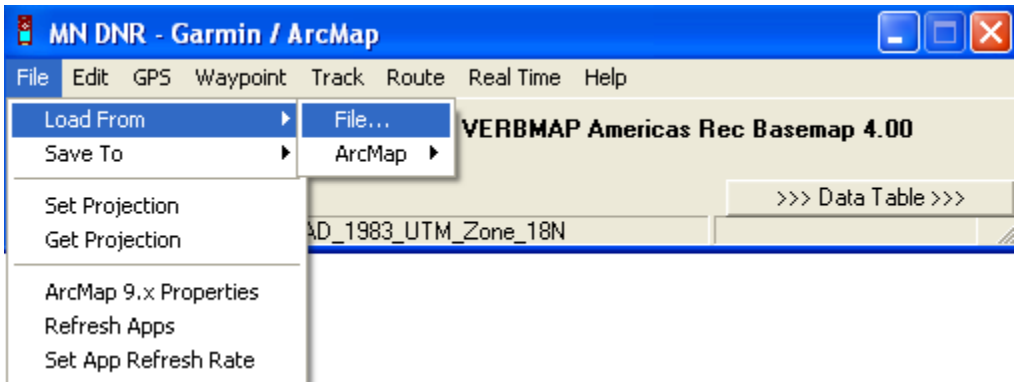
Before uploading any tabular data, you first need examine the file and determine what datum and projection settings (i.e., spatial reference) were used when the data was created. If this information is not in the table, then you will need to search for the metadata (data about the data) or ask the person who collected the data. If you can't find the metadata and are uncertain about the spatial reference then you should seriously reconsider the value of the data. Uploading tabular XY data and assigning it a wrong spatial reference is much worse than having no data at all!

1. Open ArcCatalog and examine your tabular data. What datum and projection settings were used when this data was collected?
   _____.

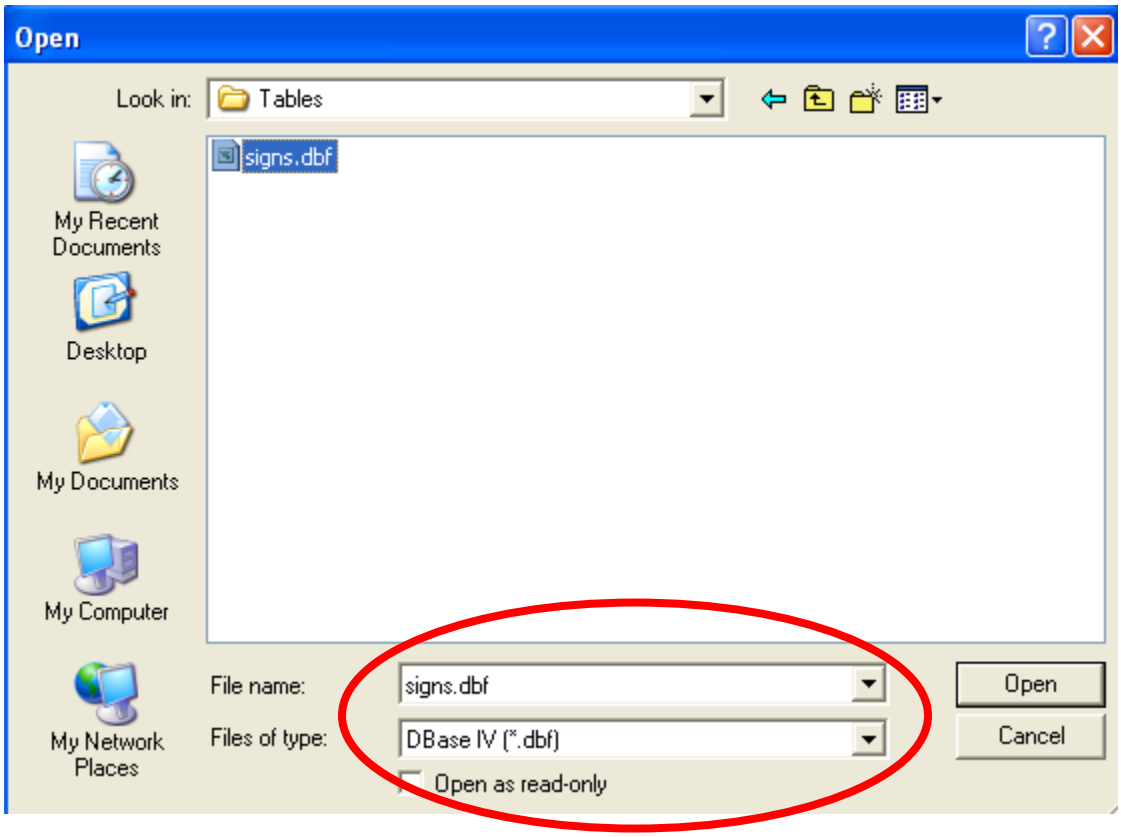
2. Reproject the data in ArcGIS or modify the DNR Garmin datum and projection settings if necessary.

3. Close ArcCatalog. Connect the Garmin unit to the PC and launch DNR Garmin if not connected already.

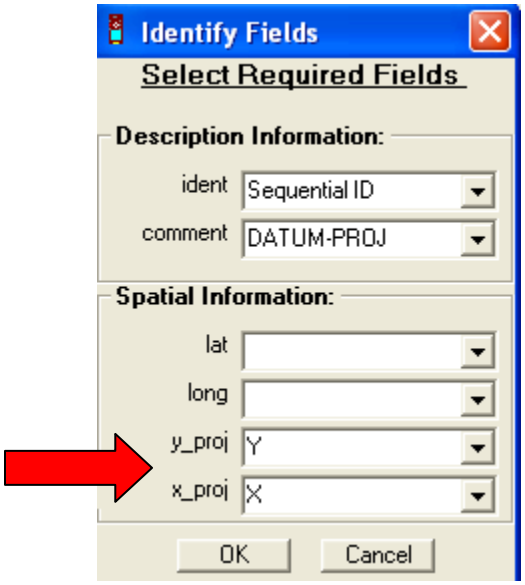
4. Click the **File** tab on the main menu and select **Load From>File**.



5. Navigate to your file and click Open. You may need to change the file type to view your file. See the example below.

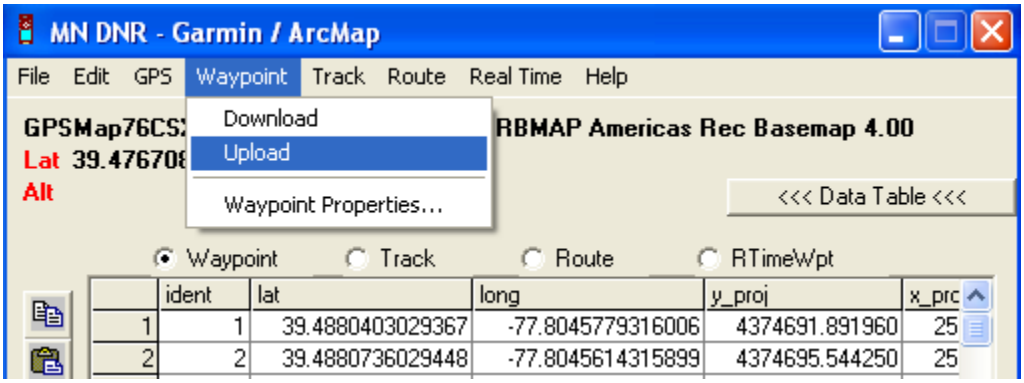


6. Click the dropdown arrows in the Spatial Information section and navigate to the appropriate fields in your table that represent the Y and X coordinates. These could be latitude or longitude fields or UTM Northings and Eastings, it will depend on your particular data set. Click **OK**.



7. You will be notified that the file was successfully loaded. Click **OK**.

8. To upload your waypoints into your Garmin GPS device click on the **Waypoint** tab on the main menu and select **Upload**. Click **OK**.



9. Use the **Map Page** or **Find** button on your Garmin to make sure all your waypoints were uploaded. Close DNRGarmin when finished.